

Plant System Design

Chas Hathaway

The portion of the project I've chosen to design for this assignment is the southwest windbreak area. In past attempts at plant guilds, I quickly found that I have to be quite flexible in what I do for a guild, because in one area there may be great success, while another has only one plant survive, and another no plants survive. I feel like telling the plants, "If you guys can just stick around for awhile, you're going to get along great!"

So I'll be flexible in the particular species selected, and where one species doesn't work, I'll find another to fill the same function.

For this southwest windbreak, I'm trying to "soften the blow" of the hard spring winds that come in and dry out the system, as well as provide late afternoon shade to cool the site earlier on. This windbreak is a much needed aspect to the whole system, as the winds dry the ground faster than the sun does. But if the design works, it should encourage the winds away from or above the most important areas of the system and provide shade, mulch, and other functions to help the rest of the system.

Southwest Windbreak Community

Major effort: to break/stagger the strong spring wind from the west that dries out much of the property, develop a thick natural "fence" to deter deer, and create a beautiful serene atmosphere for inhabitants.

Priorities (in order of importance)

1. Windbreak.
2. Deer fence/deterrent.
3. Perennial.
4. Provide material for fencing.
5. Provide building/project material.
6. Provide food, medicine, or animal fodder.



Present view of Southwest Windbreak Community

7. Provide natural rooting hormone for use throughout the site, as well as more pioneer species.
8. Give off nice smell (since wind comes from that direction, it's smell will probably permeate the property).
9. Provide late afternoon shade for west end of site.
10. Provide cover for cars in snowy winter.
11. Block trash and debris from entering site.
12. Block boring/unpleasant views
13. Provide easy quality mulch.
14. Encourage pollinator insects on to the property.
15. Drink up water that would otherwise run off the property in heavy wet winters.

Species to Include:

1. Globe willow: *Salix matsudana*, 70 feet (wide and high) and weeping willow *Salix babylonica*, 50-70 feet tall (30-50 feet wide)

Uses: Windbreak, fast-growing pioneer species, fence-building, natural rooting hormone, shade, leaf mulch, preventing water runoff, kid-climbing trees, medicinal for headaches, etc.

Layer: Canopy

Interaction with other plants in community: Globe and weeping willow will provide mulch for the honey locust, windbreak and partial shade for the smaller plants, and rooting hormone for duplicating plants in the community. (Mint, lemon balm, lilac, and thyme should especially benefit from this relationship.) The globe willow should also provide an under-path for people navigating in the community.

2. Honey Locust: (nitrogen fixer), *Gleditsia triacanthos*, 66-98 feet tall

Uses: Windbreak, nitrogen fixation, deer-fencing material (with thorny varieties), edible pods, animal fodder seed, and nitrogen-rich leaf mulch.

Layer: Canopy

Interaction with other plants in community: Honey locust is placed between willows to provide nitrogen for willows (and all plants in the community).

3. Lilac: *Syringa vulgaris*, 15-20 feet tall (up to 15 feet wide)

Uses: Natural deer fence, windbreak, beautiful scent, inviting pollinator insects, leaf-mulch, privacy barrier.

Layer: Understory

Interaction with other plants in community: Lilac will provide invitation to pollinator insects for the sweet pea, sunflowers, mint, lemon balm, and thyme. It will also provide windbreak for all smaller plants, and natural trellis for the sweet pea.

4. Sunflower: *Helianthus annuus*, (8-16 feet tall)

Uses: Trellis for sweet peas (until trees mature enough to climb), inviting pollinator insects, fence-building material.

Layer: Shrub

Interaction with other plants in community: Sunflower should provide a natural trellis for sweet pea, encourage honey-bee activity and other pollinator species for the benefit of the community, and provide a fence-like layer to discourage domestic birds from progressing further.

5. Everlasting Sweet pea: *Lathyrus Latifoliust*, (~6' tall and wide)

Uses: Nitrogen fixation, edible (and delicious) flowers, natural deer fencing.

Layer: Vine

Interaction with other plants in community: Sweet pea will provide nitrogen for the lilac and smaller plants. Sweet pea's deep root should help keep the soil pliable, and bring nutrients to the surface. It will also provide a yearly thick mulch layer for the trees, sunflowers, and lilacs.

6. Lemon Balm (*Melissa officinalis*) and Peppermint (*Mentha piperita*), (2-3 feet).

Uses: Deer deterrent, lovely scent, tasty leaves, insect deterrent.

Layer: Herb

Interaction with other plants in community: Lemon balm and mint should discourage chickens and insects from eating other plants in the community, partially by their anti-pest properties (scent, etc), and also by providing a thick ground layer to make navigation challenging for domestic birds.

7. Yucca: *Yucca filamentosa* (2.5 feet wide, seasonally 8 feet tall)

Uses: Natural fencing/deer deterrent, edible root tuber, stalks for fence and other building material.

Layer: Herb and root

Interaction with other plants in community: Yucca should help keep animals away from the rest of the community, aerate soil with it's thick root, and provide partial shade for thyme.

8. Thyme: *Thymus vulgaris* (up to 1 foot)

Uses: Pizza seasoning, deer resistant herb, insect deterrent

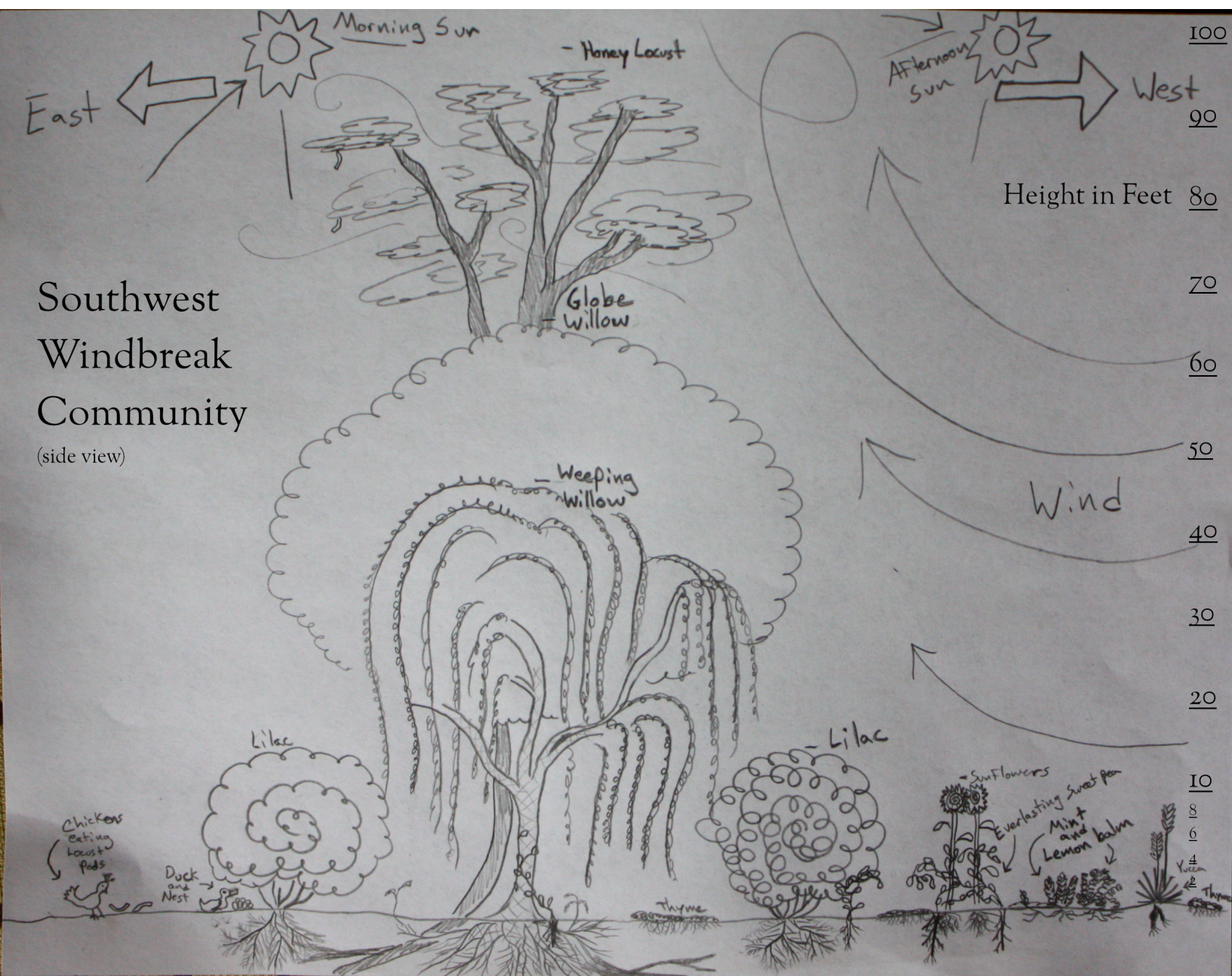
Layer: Ground cover

Interaction with other plants in community: Thyme should deter pest insects, maintain moisture at the ground level for the benefit of the smaller plants, and provide a light yearly mulch for the whole community.



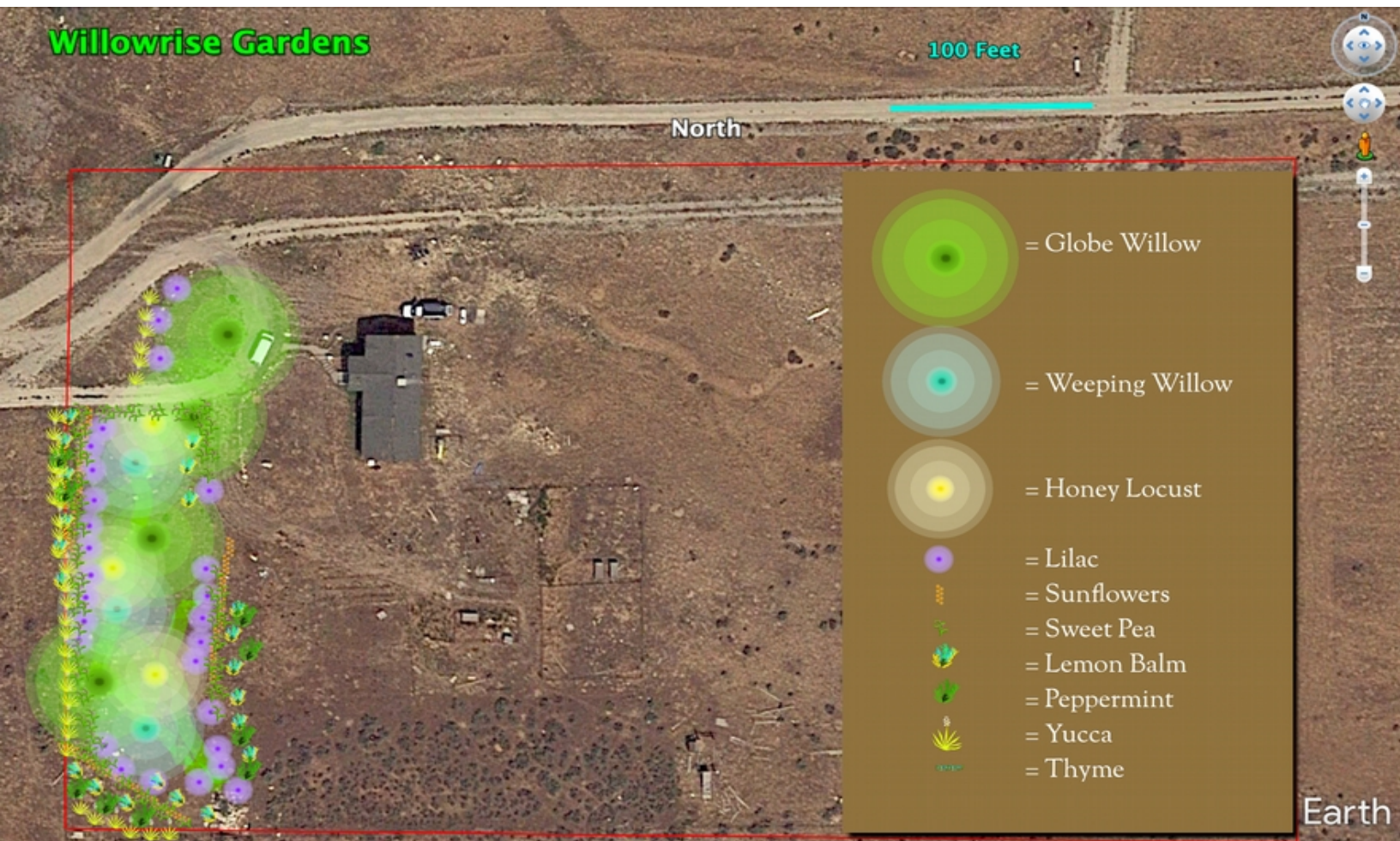
Green line indicates the contour-based location of the SW Windbreak Community as it looks now

Side View of the Southwest Windbreak Community



Southwest
Windbreak
Community
(side view)

Top (Plan) View of Southwest Windbreak Community



Establishment plan for the Southwest Windbreak Community

The SW Windbreak Community follows a contour line where I will put in a small swale to facilitate watering for the community. Using either drip or very light hose-stream, water will run into the swale, where willow trees will be planted via cuttings—poked right in the base of the swale, in order to ensure the most water access, as well as allowing them to capture snowmelt and rainfall. After they root and begin to really grow, their shade will facilitate the growth of both lilacs and honey locust, which will first be planted downhill of the swale.

Honey locust will come from store-bought plants and possibly branch clippings for rooting.

Lilacs will initially come from several store-bought plants, as well as *many* clippings from locally-grown lilacs that have proven hardy in this climate. As some lilacs grow, clippings will be taken for propagation of more lilacs in order to obtain the desired quantity.

As these pioneer trees begin to grow (especially willows), sunflowers will be planted right away to provide some protection and windbreak for young pioneer trees. Once the first years sunflower stalks are grown, everlasting sweet pea will be planted (mostly from seed, but possibly some from cuttings if possible) to climb the finished stalks. Seeds from first-year sunflowers will be planted again the following spring to perpetuate sunflower succession. As trees begin to provide partial shade to outer perimeter of the community, mint, lemon balm, and thyme will be planted from cuttings rooted near the base of the young willows (to assist in rooting), and worked outward until other plants in the system are mature enough to fulfill their intended functions.

Since willows grow significantly faster than honey locust and lilac, willow starts will initially be planted very close together. The healthiest trees best fulfilling the shade/windbreak function will be encouraged to grow, while others will be coppiced for root-hormone and light fence material (including any needed trellising for others in the community). As trees begin to get even bigger, the best trees will be encouraged still, while others will be coppiced to provide thicker wood stalks, fence posts, tool handles, etc.

Eventually sunflowers may be unnecessary to the community, and so will be encouraged to succeed naturally only (fizzling them out of their purpose in the community, but continuing to offer benefits elsewhere by the spreading of their seed via birds, squirrels, etc).

Once the community is fully established, it is hoped that only minor effort will be required to maintain it, but the community should continue to provide the intended benefits indefinitely. At that point, traversing the community will be by walking under the canopy trees or outside of the main line of foliage.

Perhaps one day we'll put a picnic bench and tree swing under the canopy for family get-togethers.